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NEW YORK CITY'S SANITARY PROBLEMS, AND THEIR SOLUTION

With certain minor exceptions, due to racial or other characteristics, the unavoidable mortality of any particular city differs but little from that of any other city of approximately the same size. It is in the avoidable causes of death that they differ. At the time the Department of Health was established, in 1866, it was estimated that nearly one-third of the deaths in New York City for ten or fifteen years previous had been from avoidable causes. That was a fearful arraignment of the city authorities of that day, for there is no better test of sanitary control in cities than the death-rate. Vital statisticians agree that in communities where the death-rate is lowest its fluctuation is least, or, in other words, that the evil conditions which contribute to the increase of avoidable deaths from time to time are not there present. It has been computed that the ratio of inevitable mortality need not rise above 17 per thousand. In the forty years since the New York Department of Health has been in existence the rate has fallen, not uniformly, but steadily, so that in 1901 it was 20 per thousand, in 1902 only 18.75 per thousand, and in 1903 only 18.20 per thousand. This means that, whereas in 1864 there were 25,000 deaths in a population of 900,000, there are now only 70,000 deaths annually in a population exceeding 3,700,000. If New York to-day had the same death-rate that it had forty years ago, the annual deaths would now be, not 70,000, but more than 105,000. Sanitary progress in forty years has brought us to the point of saving 35,000 lives annually.

It was the realization of what an excessive death-rate implied that drove public-spirited physicians to demand from the legislature of 1866 what previous legislatures had denied them,—the establishment of a metropolitan board of health, with power to devise and enforce sanitary regulations. The Citizens' Association had blazed the way. It had found typhus and consumption in overcrowded tenements; infantile diarrhoeas and malarial and typhoid maladies where streets were badly drained, neglected, and filthy with decaying organic matter; rheum, scrofula, and eruptive diseases where the people had to sleep in unventilated bedrooms or in damp cellars.

In the winter of 1865 smallpox had been epidemic in New York. Thousands of cases occurred. One inspector visited five houses in a single hour in which smallpox was prevailing within fifty feet of the largest dry-goods commission houses on the continent. Thirty-four houses within a district covered by six small blocks were foci of constant infection. Typhus, notoriously a filth disease, was endemic in tenements close to the fashionable residence section of the city; eighty cases of it came out of one house in a single year. Instances might be multiplied to show how the city was at the mercy of all sorts of pestilence. In 1866 came the cholera, with abundant opportunity to spread all over the city; but in the midst of the alarm at the fearful mortality which resulted came the establishment of that organization which was finally to bring New York under efficient sanitary control. Since that year the record of progress has been almost constant. The power of the central authority over matters of public hygiene has steadily increased. Moderation in the use of this power has been the chief cause of its growth. The public does not delegate authority unless it feels confidence in the wisdom of the body to which this authority is to be given. As the result of forty years of a generally prudent use of its functions, the New York Board of Health has now reached a point where public opinion sustains its action even when the underlying causes of this action are not fully understood.

Without attempting any detailed sketch of the progress of municipal sanitation in New York, either during the period when the Board of Health was still directly responsible to the legislature or, later, when it finally came to its present position as a part of the local government, it will be well to glance at some of the problems which have been solved in New York. These questions, with perhaps some local variations, are much the same the world over, so that briefly to review them may serve to aid other and newer municipalities to meet and solve their own problems better than if their own experiences were to be their only guide.

The great sanitary problems in any city are those which for the most part result from too great centralization of population without adequate provision for the protection of health. They may be broadly summarized as follows:

1. Faulty domestic sanitation.
2. Polluted water supplies.

3. Sale of impure milk and foods.
4. Overcrowding in tenements;
5. Transmission of infectious disease in tenements and in the public schools.
6. Encroachment of offensive trades upon residential centres.

1. It has become almost an axiom among those having sanitary supervision of New York City that the average tenement house is in better sanitary condition than the average private house. To people whose imagination has been stirred by reports of the revolting condition of some neglected tenements, this may seem surprising. The reasons for it, however, are plain. New York, in common with a hundred other cities, has gone through years of agitation for improved tenement conditions, and this agitation has produced marked results; but houses occupied by one and in a few instances by two families are less likely to be the subjects of complaint by the tenants, especially if, as is often the case, the tenant is the owner. The private house is not inspected by the sanitary authorities unless its condition is bad enough to arouse complaints from neighbors or the general public. Many of these houses, especially in the lower parts of the city, are from thirty to sixty or seventy years old, and the land on which they stand has become so valuable that they must soon be replaced by business buildings or tenements, in order to bring in a revenue commensurate with the land value. So they drag on from year to year with only the most superficial repairs at vital points, while their occupants suffer from complaints vaguely called "rheumatism" or "malaria," but really due in part or entirely to bad plumbing and inadequate drainage, which mean sewer-gas poisoning and the bacterial infections having their origin in damp cellars. New York is only just beginning to understand the danger of that faulty construction in dwellings which exposes the occupants to currents of cellar air. The recent epidemic of pneumonia is traced by competent medical authority to bacteria which thrive in cellars as much as to the ordinary well-understood foci of infection.

Among the sources of disease induced by faulty domestic sanitation must also be reckoned all places of public assemblage, such as theatres, halls, and churches. Sanitary inspection of theatres in New York, whenever it has been undertaken with honesty of pur-

pose, has disclosed serious defects in the condition of these buildings; so serious, in fact, as to justify a demand for immediate repair or immediate closure. Unhappily, the sanitary authorities have been only spasmodically vigorous in the pursuit of offenders. The churches, too, oddly enough, frequently need correctional orders to improve the sanitary condition of their premises. The very fact that most of them are used on only one day in the week has seemed to make those in charge of them especially lax with respect to sanitary precautions. Factory inspection, while usually under the immediate charge of State officers appointed for that purpose, demands the strictest attention from boards of health, because few if any of the factory inspectors have any adequate notion of the principles of hygiene.

2. Progress in bacteriological research in the last decade has impressed municipal sanitarians even more deeply with the necessity of safeguarding municipal water-supplies from pollution. While the use of cisterns and shallow wells within the built-up portions of cities was long ago condemned and has been prohibited wherever an adequate system of sanitary supervision is established, constant vigilance on the part of sanitary authorities is necessary to preserve city watersheds from contamination. New York has always been proud of its Croton water-supply, but sometimes, it must be confessed, without adequate reason. The Croton watershed has for years been occupied by a farming population, and a large number of towns and villages have grown up there. This has greatly increased the danger of pollution. For a long period of years condemnation of property has gone forward, with a view to enlarging the watershed and removing danger-spots, but independent means of sewage disposal must still be provided for thousands of these residents, and the condition of the main reservoirs with respect to decaying organic matter is still far from satisfactory. Among the most needed reforms, towards which progress is being made, are: Removal of sources of contamination, such as offensive and dangerous outhouses, diversion of the sewage from factories, creameries, etc., and a thorough medical supervision of the inhabitants of the whole section, particularly with reference to the prevalence of typhoid fever and other water-borne contagia. If precautions such as are now taken on New York's watershed had been used at Ithaca and

at Butler, Pa., the recent disastrous typhoid epidemics there might have been stayed, if not wholly averted.

3. Purity of milk and other food supplies is one of the most important factors in saving the lives and maintaining the health of people in large cities. Not least of the foes of child life is the ignorant or vicious producer of milk. To be reared in a crowded tenement, with air and light restricted, and no playground but the public street, is in itself a menace to a child's vitality. If to this handicap be added that of impure or adulterated food, the child's chances for life are small indeed. Forty years ago between 25 and 30 per cent. of the total annual deaths were of children under one year; now, in spite of the fact that a much larger portion of the population lives in tenements, the proportion which the deaths of children under one year bears to the total annual deaths has been much reduced. So far as this change in the mortality rates among children is to be ascribed to improvement in milk supplies, it must be remembered that the sources of that supply are now quite different from what they were when boards of health took them under observation. Formerly most of the milk used in New York City came from farms within or adjacent to the city limits. Cows were often kept in dark and unventilated stables and fed on swill from neighboring distilleries. Now most of the milk used in New York comes from points distant from twenty to three hundred miles from the city. The comparatively few cow-stables remaining within the city limits are, with a few exceptions, in a most unsatisfactory condition, while those in distant rural communities give evidence that their owners appreciate the importance of cleanliness in production. Opportunities for adulteration and pollution in handling are so great, however, that it has been found valuable in the interest of an improved supply to send trained sanitary inspectors to dairies along the lines of railway which bring milk to New York, in order to instruct the farmers regarding the importance of avoiding bacterial contamination of milk. Though these inspectors have had full authority to institute prosecutions, having been acting with the approval of the State Board of Health, their method has been rather to point out to the producer the advantage to be gained from the sale of pure milk, which commands a higher price in the New York market. Inspiration to the farmer is also found in a certificate granted to clean farms by the milk commission of the New York County Medical

Society, and in the example set by the owners of certain model plants, notably that of Walter W. Law, Esq., at Briarcliff Manor, Westchester County, where especial attention has been given not only to the production of clean milk, but to the rearing of a herd of cattle as robust and healthy as the most careful breeding and treatment can produce.

Much, also, may be done to impress upon the retailer the importance of purity in the milk supply. Strenuous prosecution of adulterators in recent years has driven many of the dishonest retailers out of business, while the merely ignorant have been taught that they must be careful to buy only from wholesalers of unblemished reputation. Milk stores in all large cities are much too numerous. Many of them in New York are merely one-room groceries; the proprietors sell milk less for the profit than to catch the trade of customers in other food products. This class of milk retailers has been much diminished in numbers in the last two years by rigid enforcement of a sanitary ordinance prohibiting the sale of milk in stores directly connected with living-rooms. Another ordinance, hitherto also a dead letter, but lately enforced, requires that milk offered for sale shall be kept at a temperature not exceeding 50° F., because in milk above this temperature the growth of bacteria is very rapid.

One of the most important fields of sanitary supervision over food products has to do with adulteration and substitution of goods. The deceptions practised by manufacturers are too numerous to mention. Attempts thus far made by boards of health to check this evil have been sporadic and unmethodical; but in almost any line to which the chemist chuses to turn he will find evidence of fraud upon the consumer. This shows the extent of the opportunity for corrective effort by sanitary authorities. Three flagrant instances of this adulteration or substitution occurring during the writer's incumbency as Commissioner of Health in New York City may be cited as samples of a hundred others. We had occasion to suspect the purity of a baking-powder manufactured in Tennessee, and sold in New York by a department store. We found that it contained about 25 per cent. of ground rock. That was why the retailer could quote an abnormally low price on it. All we could find for sale and in warehouse now reposes at the bottom of the Atlantic. In another instance we examined some three hundred

samples of what was purchased in local drug-stores as phenacetine. We found that a large part of this was acetanilid, a dangerous heart depressant. At another time we tested an article sold by a supposedly reputable department store as "powdered mixed borax, for household use." It contained not a trace of borax, but only a cheap and inefficient substitute. When we notified the vendors that they were liable to prosecution for fraud they replied that they had withdrawn the article from sale, but naïvely added a request to be informed how much borax they would be required to put in each package to come within the letter of the law!

4. Ever since the Metropolitan Board of Health was organized, those in charge of it have looked with increasing dread upon the rapid rise in density of population. The shape of Manhattan Island, long and narrow, and the failure of local transportation managers to provide adequate means whereby the working class could reach their places of occupation from residences situated on cheaper land to the northward, in Brooklyn, and in nearby New Jersey villages, have forced a large part of the population to seek homes in the lower part of the city. Add to this a constant influx of foreigners, of which the least progressive part has remained to eke out a miserable existence in the city, and the result has been a concentration of population in New York far greater than in any other of the world's great cities. To supply this unparalleled housing demand, owners of property have been for two generations building tenements designed to contain as many persons as possible and to "waste" as little space in providing for light and ventilation as a feebly administered law would allow. Lots were often almost entirely covered with buildings. Space behind, which should have been left open, was covered with the so-called rear tenements, even less lighted and ventilated than the ordinary ones. Thus, for years on years, the greed of capital and the need of the poor have combined to suck the life-blood of the city's population; thousands on thousands of tenants in these miserable habitations have died prematurely and wretchedly because the law-making power was not aroused to a sense of its duty towards the majority of the city's body politic. True, some improvement had been made as a result of the cholera epidemic of 1866, but after that year the growth of population constantly vitiated reformatory measures, and it was not until 1894 that any real remedial work was accomplished. Some

of the worst rear tenements were then condemned and destroyed, in spite of the vigorous opposition of their owners, and a new law was framed which prevented any return to the old vicious conditions. This law was further improved in 1901, and a Tenement-House Department established. It has power to require owners so to reconstruct their buildings as to let in more light and ventilation, and to prevent the construction of tenements upon more than 70 per cent. of any lot. Stringent rules also prohibit the use of any but approved forms of plumbing, the operation of the "school sink" privies, and the construction of stairways with non-fireproof material. The law is a model of its kind, and it has successfully withstood the assaults of greedy landlords both in the courts and in the legislature. The old style of "death-dealing" tenement yielded 25 per cent. in revenue. Model tenements of later construction yield less, but are saving thousands of valuable lives.

Much has been done in New York in the last ten years to increase the number of small parks and playgrounds in crowded tenement sections. "Mulberry Bend" was the first to go, and the demolition of its rickety houses let in light and air upon one of the deadliest parts of the city. Several other parks and breathing places have been similarly formed, and in every case the death-rate of the regions thus benefited has shown a gratifying decrease. After all, however, the real solution of New York's tenement problem is to come in the extension of rapid transit facilities. The subways building and projected will be the greatest factor in reducing New York's death-rate in the next ten years and in increasing the comfort of its inhabitants.

5. Inevitably accompanying the overcrowding of tenement population has been a rapid transmission of infectious disease. Forty years ago only epidemics, like cholera or smallpox, caused great alarm; the spread of the more common contagia seemed to the inhabitants a matter of course. It might readily be shown, however, that far more lives have been wasted in any large city by reason of the laxity of sanitary authorities in the presence of the ordinary infections. Tuberculosis, finding most of its prey in systems reduced in vitality by tenement life, has for years been chargeable with 10 to 15 per cent. of the annual deaths, scarlet fever and diphtheria have annually slain their thousands of children, and

yet municipal sanitarians have only just begun to realize that a large proportion of these deaths were preventable.

New York has led other American and many European cities in its war against tuberculosis. By successive steps its Department of Health has gradually assumed an increasing measure of control over tuberculous persons. Physicians are now required to report all such cases occurring in their private practice, and the department will, on request, assume direction of the patient's conduct, watch the progress of the disease, and endeavor to prevent its communication to others. Specimens of sputum are examined free in its laboratories, and patients unable to care for themselves are placed in institutions where curative measures are possible. Existing public or semipublic sanatoria are still inadequate to receive any great proportion of such cases, but the groundwork for a municipal sanatorium in the country is practically complete, awaiting only an adequate appropriation by the new city administration.

Prevention of the contagious diseases common to children is best secured by rigid medical inspection in the public and parochial schools. Upon assuming office under Mayor Low, the writer found the medical inspection of schools so inefficiently performed as to be almost useless. Begun in 1895 under good auspices, the system had deteriorated until the political ward leaders had the power to appoint or depose the medical inspector, regardless of efficiency and solely for political reasons. Teachers were the only diagnosticians, for, unless they "thought a child looked sick," the inspector never saw him. Such a service demanded either abolition or complete reorganization. The latter alternative was chosen. Medical inspectors were selected from the Civil Service Commission's list solely on the ground of efficiency, and have been required to make thorough examinations at frequent intervals of all New York's school population, in addition to daily examinations of cases of suspected infectious disease. The result has been a reduction of about 50 per cent. in the number of infectious cases among school children. The system outlined above, has been investigated by sanitarians in other cities, and adopted by a number of them, notably by Philadelphia.

There is no adequate excuse for the prevalence of smallpox anywhere in the United States. Epidemics of this disease are proof positive of inefficiency on the part of the sanitary authori-

ties of cities. Yet in the winter of 1901-02 smallpox was to be found in many of the cities of the Central and Eastern States, and in some of them it still persists. Our plan in New York was to insist on general vaccination, public and private. We circularized all manufacturing and business establishments, offering free vaccination to their employees, and opened vaccination bureaus in various parts of the city, meanwhile keeping the public press excited upon the necessity of preventive measures. Nearly nine hundred thousand persons received public vaccination in 1902, three times as many as had been performed in any previous year, and the number of private vaccinations must have been very large. Deaths from smallpox in New York in 1902 numbered 309; in 1903 they numbered 4.

6. Between tenements and trade in large cities there is always an irrepressible conflict. Property in neighborhoods no longer desirable for private residence, and so destined for the homes of the poor, is generally susceptible after a while to alteration for business purposes. So it happens that the needs of manufacturing interests are always crowding factories into the tenement sections. Not infrequently some of these manufacturing plants are within the classification of offensive trades; often, too, the pressure for cheap manufacture has turned part of a tenement into a sweat-shop, where the workers sleep after their day's toil is done. With surroundings so little uplifting, it is no wonder that the tenement population becomes hardened to manufacturing nuisances, which a more independent and discriminating class of people would not bear for a moment. It has often been the experience of the New York Board of Health that its efforts to suppress nuisances caused by offensive trades in a thickly populated neighborhood would lack support from the people chiefly to be benefited. They had grown up in these evil surroundings and did not appreciate how much happier their lives would be if the surroundings were improved.

Forty years ago slaughter-houses, fat-melting establishments, and kindred nuisances flourished throughout the crowded wards of the city, without the slightest attempt to render their operation inoffensive. It took whole decades of steady effort to secure their removal to sites along the North and East Rivers. To-day the city charter prohibits the establishment of any such industry except on a site adjoining the water-front, and the abattoir people are required to use the latest appliances for suppressing offensive odors and

conducting their business in a sanitary way. They need constant watching, however; improved machinery for their plants costs money, and they will avoid using it even after its installation unless the sanitary inspectors are unceasingly vigilant and absolutely incorruptible.

The presence of a large Jewish population, with its demand for Kosher-killed meat and chickens, necessitates the presence of abattoirs and chicken slaughter-houses in or near the city. The latter trade is the filthiest, and the men engaged in it need more watching than any other. Slaughtering privileges are very valuable, and the owners of them, nearly all Hebrews, are in a trust which keeps up the price of chickens and robs co-religionists for its own profit. In time all these places, as well as the abattoirs and stock-yards, will have to be removed, at least from the built-up portion of the city, if not beyond the limits of it. Unhappily, such sweeping reforms are slow, especially when the vested interests attacked are so ready to pay for "protection."

The power of the Board of Health to suppress smoke nuisances has been very fully tested in the last two years, and the result has been to confirm the constitutionality of the sanitary ordinance. Public opinion is unquestionably behind it. New York is proud of the cleanliness of its atmosphere, and citizens will support the sanitary authorities in every effort to maintain it. There are fewer violations of this ordinance now than ever before, and every one of them, so far as known, is under surveillance of the Department of Health. Evidence of widespread interest in New York's successful fight against smoke is found in queries from all over the country as to the wording of the ordinance and the steps taken to enforce it. To these the reply must always be that the detailed language of the law is immaterial; all that is needed is an honestly worded ordinance and determined effort behind it.

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Commissioner of Health, New York City, 1902-1904.